

**M. TECH.-II (CIVIL-HYDRAULIC ENGINEERING) (CBCS  
– 2015 COURSE) : WINTER - 2017  
SUBJECT : HYDRAULIC STRUCTURES**

Day : **Tuesday**  
Date : **28/11/2017**

Time : **11.00 AM TO 02.00 PM**  
Max. Marks : 60

**W-2017-2801**

**N.B.**

- 1) All questions are **COMPULSORY**.
- 2) Answers to both the sections should be written in **SEPARATE** answer book.
- 3) Figures to the right indicate **FULL** marks.

**SECTION – I**

- Q.1 Derive an expression for the limiting height of low gravity dam and differentiate between low and high gravity dam. (10)
- OR**
- Q.1 a) Explain the material used and design concept of roller compacted concrete dam. (05)
- b) Explain detailed procedure of curtain grouting for dam foundation. (05)
- Q.2 a) What is the uplift pressure? Discuss USBR criteria for its estimation. (05)
- b) Explain piping through foundation of an earth dam. (05)
- OR**
- Q.2 Write notes on: (10)
- a) Colgrout masonry in construction of gravity dam.
- b) Stress distribution in “Galleries and design aspects”
- Q.3 a) Explain the function and design criteria for filters in earth dam. (05)
- b) Explain sudden draw down conditions in the analysis of earth dam. (05)
- OR**
- Q.3 Describe various measures adopted to reduce the seepage through the body and foundation of the earth dam. (10)

**SECTION – II**

- Q.4 a) What is rock fill dam? State the advantages of the rock fill dam over earth dam. (05)
- b) What is the necessity of locating a phreatic line in the earth dam? Explain the procedure for drawing a phreatic line for homogenous dam with horizontal drainage blanket. (05)
- OR**
- Q.4 a) Differentiate between horizontal and vertical filters. (05)
- b) Describe the advantages of construction technology in rock fill dam. (05)
- Q.5 a) What is necessity of spillway? Explain the correlation between jump height curve and tail water curve. (05)
- b) Enlist the data required for design of spillway and its significance on safety of dam. (05)
- OR**
- Q.5 a) Discuss the factors affecting the coefficient of discharge of spillway for ogee spillway. (05)
- b) Write short note on bucket type energy dissipator. (05)
- Q.6 a) Write note on radial gate with sketch. (05)
- b) What are the objective of dam safety and instrumentation? (05)
- OR**
- Q.6 Which parameters are measured for monitoring of earth dam? Describe at least 3 instruments used to measure these parameters. (10)

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